

Community Protection and Hazardous Waste Reduction Initiative
Pilot Project Proposal Cynthia Babich, Del Amo Action Committee

1.0 Pilot Project Summary

Waste Stream: DDT Contaminated Soil and Groundwater

Industry: Superfund/contaminated Sites

Geography: State

Stakeholders: State Government, local government, water agencies, community groups, industries which generate organic hazardous wastes

Government: USEPA, CALEPA and its agencies

2.0. Details

Supercritical water oxidation is a technology that uses supercritical fluids to destroy chemical wastes containing organic chemicals. It is a non-incineration technology created by the Assembled Chemical Weapons Assessment Project (ACWA), to solve the problem of how to destroy the nation's chemical weapons without using incineration.

General Atomics is the developer of Supercritical Water Oxidation (SCWO) and they have a pilot facility in San Diego. They have already destroyed DDT containing waste effectively at the facility. The pilot would be to work with General Atomics to bring a SCWO unit to Torrance and destroy DDT contaminated soils with it using contaminated ground water to slurry the wastes.

SCWO is highly effective at the destruction of organic containing wastes, but needs water to create a slurry to treat contaminated soils.

3.0. Pilot Project Characteristics

SCWO is a permanent solution to soils contaminated with organic chemicals, it has a very high destruction efficiency and does not create toxic byproducts. Soils treated with SCWO can be reused on site as long as there is no heavy metal contamination; this avoids having to landfill the waste, and allows the cleanup of soils in communities rather than having the soils trucked offsite, or needing to relocate the community permanently. The organic compounds are destroyed permanently. SCWO has the added feature that if the destruction efficiencies are not reached for some reason, the soils can be re-slurried back into the equipment and the operating conditions adjusted to achieve higher destruction efficiencies.

If salts or metals are in the contaminated soils, after treatment with the SCWO, the water can be treated with a reverse osmosis unit to precipitate out the metals and salts.

A large SCWO unit can treat large volumes of waste, and SCWO units can be sized either as a 3 gallon per minute unit or a 10 gallon per minute unit. The SCWO is designed to be a transportable treatment unit; it is mounted in storage containers and moved on flatbed trucks. It is modular, and can be built to stay in one place many years, or deployed for only a year or two. This makes it more economical, and since it can be moved relatively easily, it can be transported around sites to maximize treatment options.

This type of technology is also very monitorable, which increases its community acceptability. It can be designed to hold, test, and release residuals. Environmental justice communities are often hosts to contaminated sites; many sites which are difficult to clean remain in EJ communities. SCWO units, because of their transportability, could be used on these types of sites.

Doing a pilot project at an existing site with rigorous community monitoring, could increase the types of technologies available to treat contaminated soils and groundwater at cleanup sites.

4.0. The resources and tools to evaluate the use of a SCWO unit at a Superfund site are:

- A) This technology is currently in use at the Blue Grass Army Depot; the program manager for the ACWA program and the local community activists have been very involved in the development and deployment of SCWO. They would be a source of information and encouragement on this project since they have already been involved in deploying SCWO units to solve a toxic waste problem.
- B) The developer of the SCWO technology and the owner of the patents is General Atomics; they are a California company and are eager to pilot their technology to solve pressing environmental problems.
- C) The National Academy of Sciences has spent 20 years studying SCWO, the Army Board on Science and Technology has a number of members throughout the country that could serve as technical experts on the deployment of SCWO units to solve environmental remediation problems at contaminated sites in California. Some of the NAS panel members are from California.

Other agencies that may have jurisdiction would be CALEPA and USEPA.

Given that this has been a persistent environmental problem for decades, it would seem to be in everyone's interest to see the site cleaned up, including the federal government, the state agencies, local government, and the nearby residents. The only competing interest might be the responsible parties, who would have to pay for the technology to be used.

The other benefits to engaging in this pilot project are that it would demonstrate the use of the technology to destroy wastes containing organic compounds. Such a technology could be very useful in California, where we have contaminated groundwater, export tremendous amounts of hazardous waste to other states, and have many military bases and Superfund sites in need of cleanup.

To implement this pilot project you would:

1. Approach General Atomics to see if they are interested in partnering with the state and federal government on a pilot project.
2. Approach the USEPA to see if they are interested in collaborating on a pilot project using SCWO to destroy DDT contaminated soils.
3. See if the parties responsible for the contamination will partner on the pilot project and pay for it.
4. Investigate what types of local or state permits would be required to pilot the SCWO unit at a site.
5. Create the partnership agreement with the local community, state agencies, the federal government, and local government.
6. Initiate the project.

To complete the pilot project, monitoring protocols which monitor the destruction efficiency and emissions of the technology will be necessary. The operation of the pilot would need to have aggressive oversight to document the efficacy of the remedy and the creation of numerical standards for any waste residual in soils and water would have to be documented.

After completion of the project, a lessons learned document should be created so that other communities and agencies can learn from the experiences and potentially apply the remedy to other sites.